

Application No.: 10/762722
Docket No.: FA0790USDIV

Page 3

REMARKS

Claims 14-18 are pending in the case, claims 1-13 having been canceled by preliminary amendment dated January 22, 2004.

Claims 14-18 were rejected under 35 U.S.C. § 112, first paragraph. The applicants in their response on October 10, 2005 had amended to claim 14 to include "dielectric barrier discharge means for generating oxygen plasma inside the reactor". The Office Action focused on the term "inside" to mean that the dielectric barrier discharge means for generating oxygen plasma are placed "inside" the chamber. From the plain reading of the specification and also in view of Figure 1, it is obvious that what was meant was that the dielectric barrier discharge means for generating oxygen plasma "generates" oxygen plasma "inside" the chamber. Thus, it is not seen why claim 14 fails to meet the description requirement.

Claims 14-18 were rejected under 35 U.S.C. § 112, second paragraph for being indefinite. To overcome the rejection, claim 14 was amended to delete the reference to "dielectric barrier discharge means for generating oxygen plasma inside the reactor". As a result, proper relationship is maintained in the recited "means for supplying ozone to said reactor" in claim 15 to what is in claim 14. In view of the foregoing remarks, it is respectfully submitted that claims in questions have now overcome the rejection.

The instant application is directed to a device for producing stabilized organic pigment molecules that have been modified by treatment with plasma activated process gases following mechanical dispersion. The pigments so produced are useful as ink jet printer inks. The primary elements of the apparatus of the invention are: (i) a chamber, preferably sealed; (ii) a reactor coaxially positioned within the chamber; (iii) means for introducing process gas into the reactor; (iv) optional means for supplying ozone to the reactor; and (v) a deagglomerating agitator assembly including rotating vanes with flexible coils attached thereto. The deagglomerating agitator breaks up particles of organic pigment to increase the surface area so that activated process gas can stabilize the particles; the stabilization is most effective when the particles expose the maximum possible surface area to the process gas. Additionally, the process gas can be activated by exposure to oxygen plasma in the reactor. The reactor is built with safety considerations in mind, and the process inherent to the reactor apparatus reduces the hazards associated with highly exothermic prior art organic pigment

Application No.: 10/762722
Docket No.: FA0790USDIV

Page 4

oxidation reactions. This, then, is essentially the field of this particular invention, and some of the primary objects and goals of the apparatus claimed.

The rejection of claims 14 and 15 under 35 U.S.C. § 103 (a) as being unpatentable over US 4,590,265 to Bogan et al. (hereafter Bogan) in view of US 5,458,856 to Marie et al. (hereafter Marie) is respectfully traversed in view of the following remarks:

Unlike current chamber 4, reactor vessel 10 in Bogan with the centrally disposed stirrer 14 is positioned as noted in Fig. 1, vertically. As stated at column 10, lines 50-68, vessel 10 is a conventional fluid-bed reactor wherein the bed is alternately fluidized with air supply from gas stripper (GS) air supply 34 via GS inlet 38 and vapor through valve controlled vapor recirculation (VR) inlet 24 obtained from vaporizer 32. Due to gravity, the fine powder tends to settle at the conical shaped vessel bottom. By alternately passing air or vapor, a fluidized bed is maintained and then further agitated by stirrer 14. Thus, device in Bogan is incapable of producing stabilized organic pigment particles produced by currently claimed device, since the current device as seen in Fig. 1 and also at page 4, line 17 of the specification. If one were to allow the fine powder in Bogan to settle along the conical shape of vessel 10 without creating a fluidized bed condition, the fine powder will not be exposed uniformly to aqueous vapor, which is essential to stabilize the highly reactive particles, such as pigments in the current device. No means have been provided in the current device for producing a fluidized bed, nor would that be a desirable condition since particles, such as pigments in the current device tend to be highly reactive (see page 4, lines 9-12 of the current specification). Thus, it is not seen why, as noted in the Office Action, VR inlet 24 communicating with vaporizer 32 and blower 28 is the same as the currently claimed means for introducing in said reactor aqueous vapor entrained in a carrier gas. However, to further distinguish present device from Bogan, claim 1 was amended to recite "a chamber positioned substantially horizontally on a supporting block". Support can be found on page 4, lines 17-18. Stirrer 14 of Bogan will be of no use to deagglomerate the pigment particles if vessel 10 is positioned horizontally as all the pigment particles will be away from the rotating blades on stirrer 14. Thus, it is not seen why Bogan renders the current claims 14-15 obvious.

In view of the foregoing remarks, even if one were to combine Bogan with Marie, it would not occur to one of ordinary skill in the art to arrive to the currently claimed invention.

The rejection of claim 16 under 35 U.S.C. § 103 (a) as being unpatentable over Bogan in view of Marie, as applied to claims 14 and 15 and further in view of US 1,167,536 to Tokheim or US 5,037,210 to Bliss is respectfully traversed in view of the following remarks:

Application No.: 10/762722
Docket No.: FA0790USDIV

Page 5

One of ordinary skill in the art would not combine Bogan/Marie with Tokheim or Bliss. The blades of stirrer 14 in Bogan agitate the fine powder at the centralized core portion of vessel 10, which is necessary as the fine powder in Bogan flows upwards in its fluidized state. Tokheim provides an agitating mechanism for settling tanks used in dry cleaning or paint manufacture with scrapers 19 positioned at the conical bottom of tank 1. The contents are then agitated by scraper 19 via a coaxial centrally disposed hollow shaft 12 in which a suction pipe 6 is positioned and through which the agitated content from tank 1 can be removed. Thus, if one were to substitute the centrally disposed stirrer 14 with scraper 19 of Tokheim, the presence of porous stainless steel felt-like material 22 in vessel 10 of Bogan (column 10, line 55-56) forming the bottom of the reactor space will interfere in its operation. One of ordinary skill in the art would not get rid of felt-like material 22 in Bogan, which is necessary to maintain a fluidized bed, absent any suggestion or teaching in any of these references.

Moreover, even if attempted, none of these references individually or in combination would be suitable for a horizontally disposed chamber 4, such as the one currently claimed.

Bliss discloses a mixing implement for mixing powdered solids, such as plaster, cement mix, or pancake batter, with liquids. The implement essentially consists of a rotatable shaft with a coil attached perpendicularly to the shaft at one or both ends of the shaft. The coils are useful for breaking up clumps of wetted powder and dispersing them in the liquid so that they suspend in the liquid medium. The same arguments hold true for Bliss as those made above, since Bliss provides for just another version of scrapers. In view of the foregoing remarks, even if one were to combine Bogan with Marie, Tokheim or Bliss, it would not occur to one of ordinary skill in the art to arrive at the currently claimed invention.

The rejection of claim 17 under 35 U.S.C. § 103(a) as being unpatentable over Bogan in view of Marie, as applied to claims 14 and 15 and further in view of US 4,458,856 to Breneman et al. (hereafter Breneman) is respectfully traversed in view of the following remarks:

Breneman discloses a glass-lined steel vessel 10, paddles 60 and 70 for stirring the bath 20, and a lance 50 for introducing contaminated chlorosilane stream into CaO slurry. The vessel of Breneman is structurally distinct from the reactor assembly 1 of the instant invention as set forth in amended claim 14. The paddles 60 and 70 stir the reactant bath while the agitator assembly 2 of the instant application deagglomerates organic pigment particles. The paddles and the vanes 16 with attached flexible stainless steel coils 18 are structurally and

Application No.: 10/762722
Docket No.: FA0790USDIV

Page 6

functionally dissimilar. Breneman discloses nothing in relation to the lance 50 to indicate that its structure or placement within the vessel maximizes the time during which gas phase and liquid phase reactants may remain in contact within the vessel. Applicant respectfully submits that the apparatus of claim 17 does not structurally read on the apparatus disclosed in Breneman and that these two claims are not rendered obvious by Breneman. Moreover, if one were to position vessel 10 of Breneman in a horizontal position, lance 50 would be exposed and paddles 60 would be of little use since most of the pigment particles would settle at the bottom of vessel 10. Thus, it is not seen why one of ordinary skill in the art would combine these various references to arrive at the present invention absent any suggestions or teaching in any of these references.

The rejection of claim 18 under 35 U.S.C. § 103(a) as being unpatentable over Bogan in view of Marie, as applied to claims 14 and 15 and further in view of US 3,168,817 to Beckman et al. (hereafter Beckman) is respectfully traversed in view of the following remarks:

Since one of ordinary skill in the art would not combine any of these references, it is not seen why one would look at Beckman to arrive at claim 18.

SUMMARY

Applicant respectfully requests reconsideration of claims 14-18 as amended. Applicant believes that all the stated grounds for rejection have been rendered moot or otherwise overcome, and that this paper constitutes a complete and fully responsive reply and thereby places the application in condition for allowance. A Notice of Allowance is respectfully solicited.

Applicant believes that no fee is due with this Amendment. Should a fee, not accounted for herein, be due, please charge such fee to Deposit Account No. 04-1928 (E.I. du Pont de Nemours and Company).

Should the Examiner have any questions about the application or the content of this paper, please call the undersigned at the telephone number provided below.

Application No.: 10/762722
Docket No.: FA0790USDIV

Page 7

Respectfully submitted,



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